

## [CLAIMS]

1. (CURRENTLY AMENDED) A nasal cannula for supplying a respiratory gas to a patient, the nasal cannula comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

wherein each head is formed integrally with and from the same material as the pair of supply line and each head comprises a generally cylindrical surface which is sized to be snugly received and retained within one of the nasal cavities of the patient,

each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm),

an exterior surface of each head has a plurality elongate troughs formed therein, and each of the plurality of elongate troughs extends parallel to one another and is formed in the generally cylindrical surface of the head;

each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges having maximum outside diameters coequal with the maximum outside diameter of each head to partially define one of the plurality of leakage passages, [[and]]

the plurality elongate troughs form, once inserted into the respective nasal cavity, a plurality of leakage passages, ~~between a portion of inwardly facing nasal cavity skin of the patient and the plurality elongate troughs of the head~~, to facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient; and

~~the pair of supply lines being connected with one another by a central bridge member having an axial length that spans no more than a width of a philtrum of the patient.~~

2. (CANCELED).

3. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to

facilitate exhausting of the excess respiratory gas and inhalation of any room air required by the patient.

4. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

5. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches ( $0.013\text{ cm}^2$ ) and 0.0055 square inches ( $0.035\text{ cm}^2$ ).

6. (CANCELED).

7. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein an upper surface of the central bridge member is rounded to avoid any sharp edge that may contact with a nasal septum of the patient.

8. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the supply lines and the heads are manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another.

9. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 7, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, and at least the second end of each of the supply lines is curved to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient.

10. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the central bridge member aligns the pair of supply lines parallel to one another to facilitate insertion of the heads, carried by the ridge of the pair of supply lines, within the nostrils of the patient, and each of the supply lines initially extends away from the central bridge member and then bends into a curved configuration having a radius of curvature of between about 0.4 inch to about 0.8 inch which creates a minimal pressure drop, turbulence and noise generation at a maximum flow rate.

11. (CURRENTLY AMENDED) A nasal cannula assembly for supplying a respiratory gas to a patient, the nasal cannula assembly comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an opposite end of each of the pair of supply lines being connected to an auxiliary respiratory gas supply line; and a remote end of each of the auxiliary respiratory gas

supply line is connected with a respiratory gas source for supplying the respiratory gas to the patient;

wherein each head is formed integrally with and from the same material as the pair of supply line and each head comprises a generally cylindrical surface which is sized to be snugly received and retained within one of the nasal cavities of the patient, an exterior surface of each head has a plurality elongate troughs formed therein, and each of the plurality of elongate troughs extends parallel to one another and is formed in the generally cylindrical surface of the head,

each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm); [[and]] ←  
←  
←

the plurality elongate troughs form, once insert into the respective nasal cavity, a plurality of leakage passages, between a portion of inwardly facing nasal cavity skin of the patient and the plurality elongate troughs of the head, to facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient. ←  
←  
←  
←  
←  
←

each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges having maximum outside diameters coequal with the maximum outside diameter of each head to partially define one of the plurality of leakage passages; and ←  
←  
←  
←  
←  
←

~~the pair of supply lines being connected with one another by a central bridge member having an axial length that spans no more than a width of a philtrum of the patient.~~ ←  
←

12. (CANCELED).

13. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to facilitate exhausting of the excess respiratory gas and inhalation of any room air required by the patient.

14. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair

of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

15. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches (0.013 cm<sup>2</sup>) and 0.0055 square inches (0.035 cm<sup>2</sup>).

16. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm).

17. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein, the central bridge member is formed integral with and from a same material as the supply lines and the heads.

18. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein the nasal cannula is manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another and is curved.

19. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, and at least the second end of each of the supply lines is curved to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient.

20-43. (CANCELED)

44. (CURRENTLY AMENDED) A nasal cannula for supplying a respiratory gas to a patient, the nasal cannula comprising:

a nasal canna assembly having first and second cannula arms connectable to corresponding first and second supply lines, the supply lines being connectable to a respiratory gas source and each cannula arm including an integral head at an end thereof with each head being insertable into a corresponding nasal passage of a patient, each head thereof including a discharge opening for providing a respiratory gas to the corresponding nasal passage of the patient, and ←  
←  
←  
←  
←  
←  
←  
←  
←

~~a pair of supply lines which each have an integral head at one end thereof with a discharge opening therein for discharging a respiratory gas to the patient, and the opposite end of each of the pair of supply lines being connectable to a respiratory gas source;~~ ←  
←  
←  
←  
←

a central bridge member, located adjacent the heads, for aligning the pair of supply lines with one another and facilitate~~facilitating~~ insertion of the heads within the nostrils~~corresponding~~ nasal passages of the patient; and,

~~each head being larger in size than the supply line and each head being formed integrally with and from the same material as the supply line and the bridge;~~

~~wherein a cylindrical exterior surface of each head [[has]] having a maximum outside diameter that is slightly larger than an interior diameter of a nasal cavity of the patient in which the head is to be received so that each head is sized to be snugly received and retained within one of the nasal cavities of the patient, and wherein~~

the exterior surface of the head has a plurality elongate troughs formed therein so as to ~~defined define with a portion of inwardly facing nasal cavity skin the patient a plurality of leakage passages which facilitate exhausting of excess respiratory gas through the leakage passages while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient, and each of the plurality of elongate troughs extends parallel to one another and is formed in the generally cylindrical surface of the head,~~

each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges having maximum outside diameters coequal with the maximum outside diameter of each head to partially define one of the plurality of leakage passages, and

each of the first and second gas supply lines has a first portion curving outwards and upwards from a connection with the correspond one of the first and second cannula arms so as to follow a surface of a cheek of a patient along a path below a corresponding cheekbone of a patient to a first point in a region generally below an outer corner of a corresponding eye of a patient,

each gas supply line having a second portion extending from the first point that curves downwards and inwards along the surface of the surface of the cheek of a patient along a jawline of a patient to a second point between the outer corner of the corresponding eye of a patient and a corresponding ear of a patient,

each gas supply line having a third portion extending from the second point that curves inward below the corresponding jawline of a patient and forward along a corresponding side of a through of a patient to a third point located below a chin of a patient and near a mid-line of a patient's face, and

10/566,305

each gas supply line having a fourth portion extending from the third point and curving toward the other gas supply line and downwards to a connector for connecting the first and second gas lines to a common gas supply line.

←  
←  
←